J. J. WALSER.

DELIVERY MECHANISM FOR PRINTING PRESSES.

APPLICATION FILED JAN. 26, 1916.

1,279,796.

Patented Sept. 24, 1918.

3 SHEETS—SHEET 1.

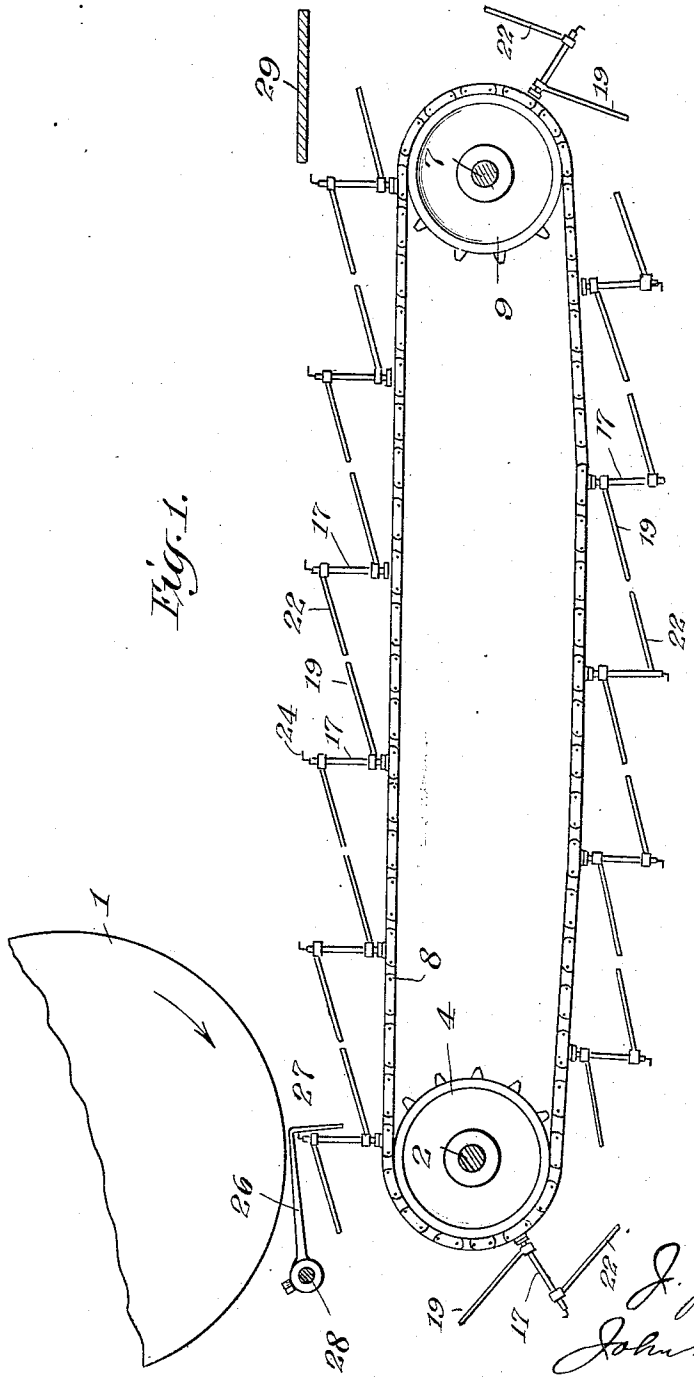

Fig. 1.

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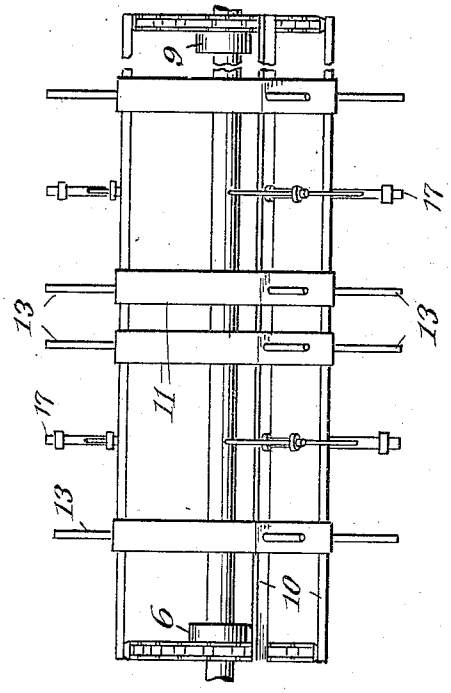
Fig. 3.



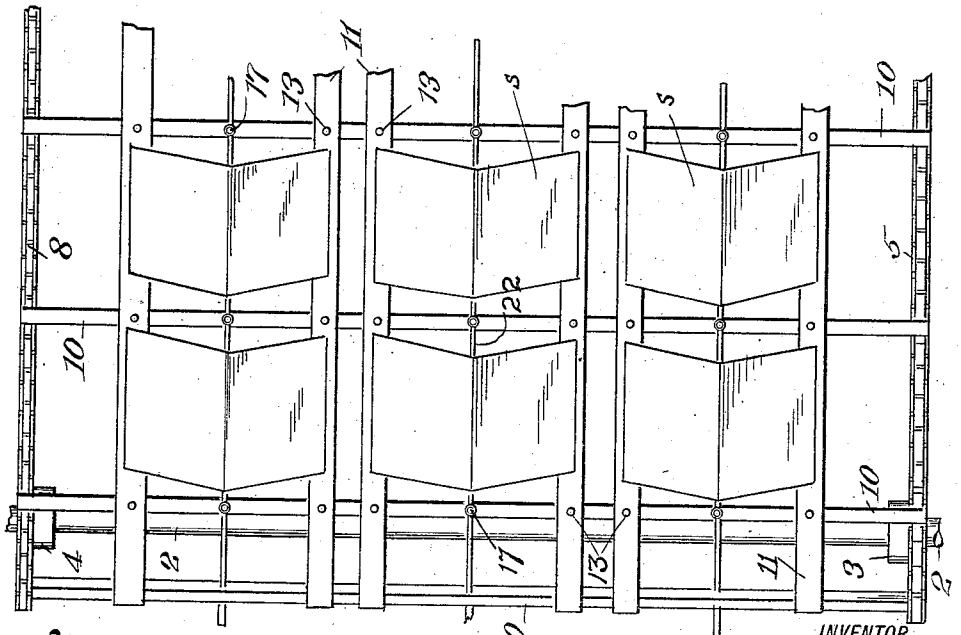


Fig. 2.

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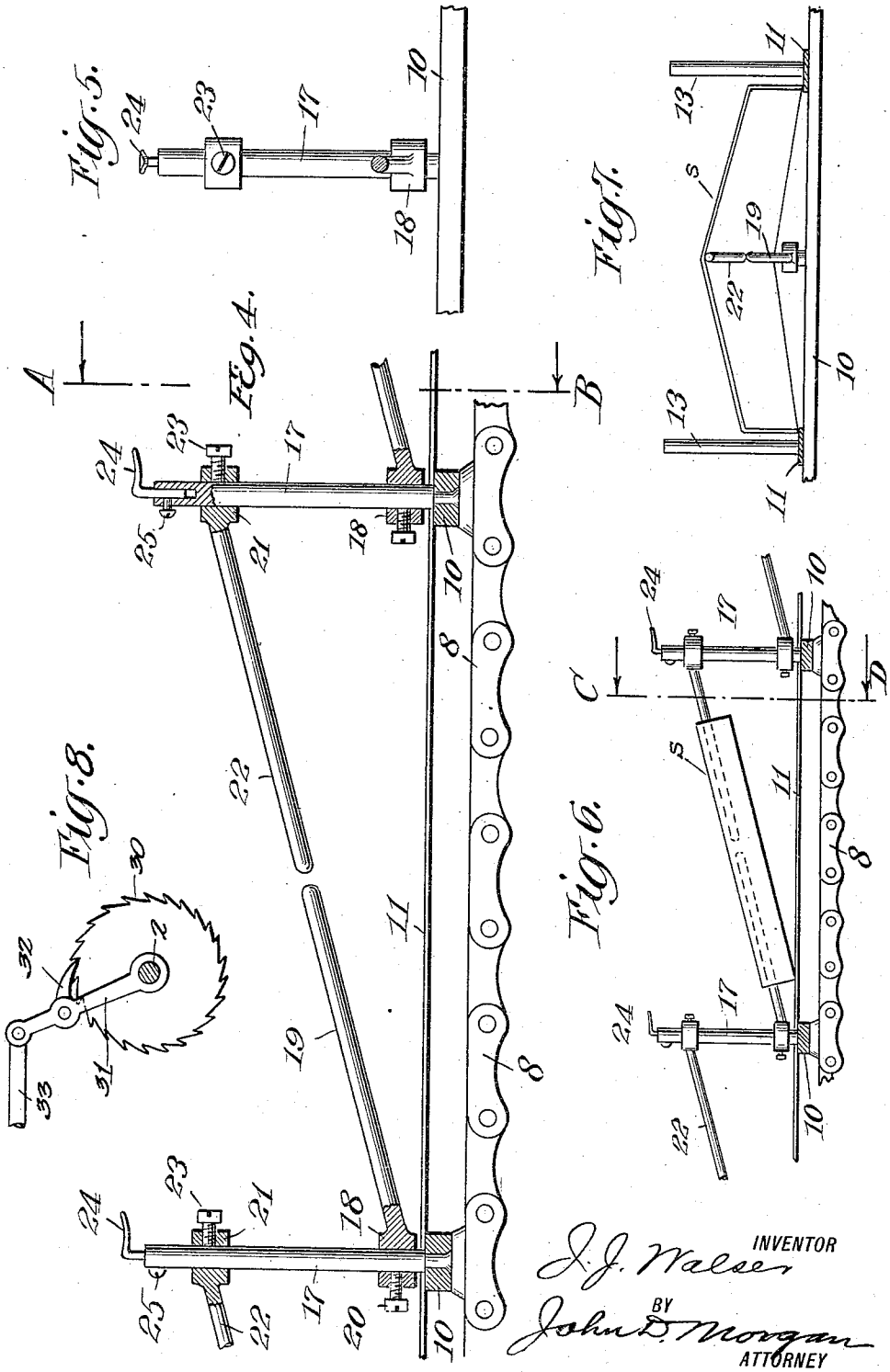
3 SHEETS—SHEET 3.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH J. WALSER, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

DELIVERY MECHANISM FOR PRINTING-PRESSES.

1,279,796. Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed January 26, 1916. Serial No. 74,449.

To all whom it may concern:

Be it known that I, JOSEPH J. WALSER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Delivery Mechanisms for Printing-Presses, of which the following is a specification.

The invention relates to delivery mechanisms for printing presses and like machines, and in certain aspects thereof, it relates more especially to delivery mechanisms wherein signatures are received one upon the other.

Objects of the invention will be set forth in part hereinafter, and in part will be obvious herefrom, such objects being attained by the combinations and instrumentalities pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and forming a part hereof, illustrate one embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawings:

Figure 1 is a side elevation of a delivery mechanism constructed in accordance with the principles of the invention;

Fig. 2 is a fragmentary top plan corresponding to the left hand end of Fig. 1, but with the delivery cylinder and certain other parts omitted;

Fig. 3 is an elevation looking at Fig. 1 from the right, also omitting the cylinder;

Fig. 4 is an elevation, on an enlarged scale and with certain parts in section, of a single signature supporting saddle;

Fig. 5 is an elevation on the line A—B of Fig. 4;

Fig. 6 is an elevation, on a smaller scale, showing a signature resting upon the saddle;

Fig. 7 is an elevation on the line C—D of Fig. 6 looking to the left; and

Fig. 8 is a fragmentary detail of the intermittent drive.

Referring to the accompanying drawings, illustrating by way of example, one embodiment of the invention, a suitable device supplies the signatures, such as a folding or delivery cylinder 1, or like device, which receives the signatures from a folding cylinder or other suitable mechanism. In certain kinds of machines a plurality of signatures are produced across the sheet or web, the original wide sheet being slit and folded to form the signatures, these signatures being carried side by side and delivered in a transverse group simultaneously to the delivery mechanism, and such a machine is shown in the drawings.

In the embodied form, an intermittently traveling pocket delivery mechanism is provided, having a transverse series of pockets, into each of which pockets a signature is simultaneously dropped by the delivery cylinder 1. Successive groups of signatures are so dropped until the requisite number of signatures are built up or superimposed, one on the other, in each of the pockets. When this has been done, the delivery mechanism moves forward, and the filled series of pockets pass on from the delivery station, and a new transverse line of pockets is at the delivery station or point, to receive the next succeeding group of sequentially delivered and superimposed signatures. This operation is repeated in succession, so that each transverse series of pockets will receive its group of superimposed or stacked signatures and will then move forward to bring the next succeeding group of pockets to the delivery point or station.

In the illustrated form, a shaft 2 is provided carrying sprocket wheels 3 and 4. Upon the sprocket wheel 3 is an endless sprocket chain 5, extending substantially horizontally along the machine, and running also over a sprocket wheel 6 fixed to a shaft 7. An endless sprocket chain 8 runs over the sprocket wheel 4 and also over a sprocket wheel 9 upon the shaft 7. Fixed to the sprocket chains 5 and 8 is a series of transverse bars 10, these bars traveling about with the sprocket chains. The bars 10 are spaced apart the distance occupied by a pocket, or by the pockets arranged in transverse series. In the embodied form, the cylinder 1, as stated, delivers a plurality of

signatures simultaneously, which signatures are received end to end by the respective transversely arranged pockets, and with their folded edges positioned across or transversely of the machine.

Extending longitudinally, that is in the same direction as the sprocket chains, and fixed to or supported by the transverse bars 10, are tapes or bands 11, these tapes being located at or near the top and bottom ends of each signature of the transverse group of signatures. At the juncture of each bar 10 with each band 11 is an upwardly projecting pin or post 13, defining the pocket and serving to keep the signatures in place.

In this class of machines, and especially where a collecting and folding mechanism is employed in connection with rotary perfecting web presses, and the signatures are thus made up from the freshly printed sheets cut from the perfected web, it is desirable and necessary that the signatures be laid down neatly, compactly, and in register one upon the other, so that there may be no doubling back upon themselves of the signatures or any part thereof, and so that there may be no necessity of later lining or truing up the signatures in the pile, thereby causing smearing or smutting of the freshly printed matter.

With a mechanism of this kind, the folded edge or side of the signatures (which are positioned transversely of the machine) spring open more or less, thereby making that side of the pile of signatures much higher than the opposite side, and consequently causing the signatures to slide one on the other. This makes it exceedingly slow and unhandy to pick up the superimposed signatures, and also causes smutting of the fresh printing in the necessary jogging up of the signatures to square them preparatory to binding. Also the sweep of the delivery cylinder, especially when relatively light weight paper is used, frequently will cause the upper half of the signatures, and sometimes the entire open or front edge thereof, to draw up or to double up, necessitating the smoothing out of the signatures, in addition to the difficulties already stated.

Means are provided by this invention for preventing such faults, and there is provided substantially centrally of each pocket a device across which the back or folded edge of each signature, as it is deposited, is bent or broken, and the signatures are also supported in an inclined position and with their ends preferably somewhat lower than the middle portion.

In the embodied form there is provided substantially centrally of each pocket, considered transversely, or along the signature, an upright post 17, a series of such posts 17 being in substantial longitudinal alinement along the bars 10. Adjacent its lower end each post 17 is encircled by a collar 18 from which extends an upwardly inclined rod 19 extending part way across or along the pocket, and preferably about half way across. The collar 18 is adjustable up and down the post 17, and is held in position by a set or clamping screw 20. Upon the upper part of each post 17 is a collar 21, and extending in the opposite direction from rod 19 and inclined downwardly therefrom is a rod 22, extending part way across or along the pocket. The rod 19 from one post 17 and the rod 22 from the next post 17 are in alinement with one another and constitute a continuous support or saddle for the signature across its width. Each collar 21 is also vertically adjustable on its post 17, and it is held in adjusted position by a set or clamping screw 33.

The saddles, consisting of the rods 19 and 22, may thus be raised or lowered to suit the number of signatures to be laid or superimposed one upon the other thereon, and also to provide proper space for a given or desired number of signatures, notwithstanding different weights or thickness of paper being used in the signatures. By reason of the signature supports being centrally discontinuous, that is, by reason of the central break in the saddles, by the use of the two rods 19 and 22, the saddles are adapted to pass around the sprocket wheels, as will be clearly seen from Fig. 1 of the drawings.

At the top of each of the posts 17 a hook or detent 24 is provided, the shank thereof fitting into a hole in the top of the post 17, and being held in position by a screw 25, screw-threaded into the post 17 and engaging the shank therewithin. The hooks or detents 24 operate to keep the signatures from being combed over the top of the post by the cylinder 1 from which the signatures are dropped into the pockets as already described.

There may be used also, if desired, fingers 26 suitably supported by a transverse rod 28, and having downwardly extending portions 27, to insure the signature dropping within the posts 17 and 13. An unloading station 29, conveniently located above the pockets, preferably just before they make the turn about the sprocket wheels 6 and 9 may be provided upon which the signatures may be lifted out of the transverse series of pockets which are in operative position therewith, as shown in Fig. 1.

The signatures are indicated by reference letters *s*.

Suitable operating or driving means are provided for intermittently moving the pockets in the manner already mentioned, and such driving means may be applied to shaft 2 if desired. As shown, a ratchet wheel 30 is fixed on shaft 2. Loosely mounted on shaft 2 is a reciprocating arm 31, carrying

a pawl 32, which operates the ratchet wheel 30. Arm 31 is reciprocated in any suitable manner as by a connecting rod 33, connecting to any suitable driving mechanism.

With the present invention, and by so bending the backs of the signatures over the saddles, the springing partly open at the folded edge of the signature is overcome, and instead the signatures fold sharp and close at the back and lie flat in the pile. Consequently the height of each pile of signatures at the folded edge as they lie on the saddles is very little greater than the opposite or open edge. By having the saddles inclined, the signatures are brought to register against the posts 17 at the lower end, and the signatures lie packed in a squared pile, and no jogging or other detrimental handling is required when the pile is picked off the saddle to be sent to the bindery.

From all the foregoing it will be understood that a machine has been provided obviating the disadvantages enumerated, and realizing the objects and advantages set forth, together with other objects and advantages.

The invention in its broader aspects is not limited to the particular form of mechanism herein shown and described, but changes may be made therefrom within the scope of the accompanying claims, without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A printing press delivery mechanism including in combination a post and a rod supported thereby and extending outwardly therefrom so as to support a signature in elevated position at a single point in its fold and means for supporting said rod in any one of a plurality of positions along said post.

2. A printing press delivery mechanism including in combination a post and a rod supported thereby and extending outwardly therefrom so as to support a signature in elevated position at a single point in its fold, said rod being somewhat inclined from the horizontal and means for supporting said rod in any one of a plurality of positions along said post.

3. A printing press delivery mechanism including in combination a post and a rod supported thereby and extending outwardly therefrom so as to support a signature in elevated position at a single point in its fold and means for preventing a signature from passing over the top of said post.

4. A printing press delivery mechanism including in combination a post and a rod supported thereby and extending outwardly therefrom so as to support a signature in elevated position at a single point in its fold and means for preventing a signature from passing over the top of said post and vertical adjusting means for said preventing means.

5. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post, another rod supported by the other post and extending part way across the pocket toward the first mentioned rod, the rods constituting a support for a signature across its folded edge.

6. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post, another rod supported by the other post extending part way across the pocket toward the first mentioned rod, the rods constituting a support for a signature across its folded edge and means for regulating the height of the rods on their supports.

7. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post in an inclined position, and another rod supported by the other post and extending part way across the pocket toward the first mentioned rod in an inclined position in substantial alinement with the other rod, the rods constituting a support for a signature across its folded edge.

8. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post in an inclined position, and another rod supported by the other post and extending part way across the pocket toward the first mentioned rod in an inclined position in substantial alinement with the other rod, the rods constituting a support for a signature across its folded edge and means for regulating the height of the rods on their supports.

9. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post, another rod supported by the other post and extending part way across the pocket toward the first mentioned rod, the rods constituting a support for a signature across its folded edge and means for preventing a signature being displaced over the top of the post.

10. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post, another rod supported by the other post and extending part way across the pocket toward the first mentioned

rod, the rods constituting a support for a signature across its folded edge and signature detaining means at the top of said post.

11. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post in an inclined position and another rod supported by the other post and extending part way across the pocket toward the first mentioned rod in an inclined position in substantial alinement with the other rod, the rods constituting a support for a signature across its folded edge and means for preventing a signature being displaced over the top of the post.

12. A printing press delivery mechanism including in combination two posts at opposite sides of a signature pocket, a rod supported by and extending part way across the pocket from one post in an inclined position and another rod supported by the other post and extending part way across the pocket toward the first mentioned rod in an inclined position in substantial alinement with the other rod, the rods constituting a support for a signature across its folded edge and signature detaining means at the top of said post.

13. A printing press delivery mechanism including in combination a longitudinally arranged series of narrow supports, for supporting signatures at their middle part in an elevated position and across the folded edge of the signatures, means for depositing signatures upon said supports, and means for intermittently moving said series of supports to bring them successively to the signature depositing position.

14. A printing press delivery mechanism including in combination a longitudinally and transversely arranged series of narrow supports, for supporting signatures at their middle part in an elevated position and across the folded edge of the signatures, means for depositing signatures upon said supports, and means for intermittently moving said series of supports to bring them successively to the signature depositing position.

15. A printing press delivery mechanism including in combination a longitudinally arranged series of narrow supports, somewhat inclined from the horizontal for supporting signatures at their middle part in an elevated position and across the folded edge of the signatures, means for depositing signatures upon said supports, and means for intermittently moving said series of supports to bring them successively to the signature depositing position.

16. A printing press delivery mechanism including in combination a longitudinally and transversely arranged series of narrow supports, somewhat inclined from the horizontal for supporting signatures at their middle part in an elevated position and across the folded edge of the signature, means for depositing signatures upon said supports, and means for intermittently moving said series of supports to bring them successively to the signature depositing position.

17. A printing press delivery mechanism including in combination a longitudinally arranged endless series of narrow supports, for supporting signatures at their middle part in an elevated position and across the folded edge of the signatures, said supports being centrally discontinuous, means for depositing signatures upon said supports, and means for intermittently moving said series of supports to bring them successively to the signature depositing position.

18. In a signature collecting and delivery mechanism, a rod extending in elevated position and inclined somewhat from the horizontal and means for depositing a signature upon the rod with the fold of the signature thereacross and at the upper side.

19. In a signature collecting and delivery mechanism, a rod extending in elevated position and inclined somewhat from the horizontal, and means for successively depositing signatures in superposition upon the rod with the folds of the signatures thereacross and at the upper side.

20. In a signature collecting and delivery mechanism, a rod extending in elevated position, and means for dropping successive signatures in superposition upon the rod with their folds thereacross.

21. A signature collecting and delivery mechanism including in combination a signature supporting rod, means for supporting the rod whereon it is adjustable, and means for dropping successive signatures in superposition upon the rod with the folds of the signatures thereacross.

22. A signature collecting and delivery mechanism including in combination a signature supporting rod inclined somewhat from the horizontal, means for supporting said rod whereon it is vertically adjustable, and means for dropping a signature with the fold across the rod and at the upper side.

23. A printing press delivery mechanism including in combination a flexible, endless conveyer, rollers over which the conveyer passes at the ends of its travel, signature carriers comprising narrow supports for the signatures extending longitudinally of the conveyer, said signature supports being discontinuous at an intermediate point in their length.

24. A printing press delivery mechanism including in combination a flexible, endless conveyer, rollers over which the conveyer passes at the ends of its travel, series of signature carriers arranged transversely upon

the conveyer, and each comprising a narrow support for the signatures extending longitudinally of the conveyer, said signature supports being discontinuous at an intermediate point in their length.

25. A signature collecting and delivery mechanism including in combination longitudinally extending flexible conveyers, rollers over which the conveyers pass, spaced apart supports extending across between the flexible conveyers and attached thereto, a plurality of elevated signature supports spaced apart on the cross supports, and means for dropping signatures upon the supports to be supported thereby at a single point across the fold.

26. A signature collecting and delivery mechanism including in combination longitudinally extending flexible conveyers, rollers over which the conveyers pass, spaced apart supports extending across between the flexible conveyers and attached thereto, a plurality of elevated signature supports spaced apart on the cross supports, and being broken at a point intermediate their ends, and means for dropping signatures upon the supports to be supported thereby at a single point across the fold.

27. A signature collecting and delivery mechanism including in combination longitudinally extending flexible conveyers, rollers over which the conveyers pass, spaced apart supports extending across between the flexible conveyers and attached thereto, a plurality of elevated signature supports spaced apart on the cross supports, and being positionable toward and from their supports and means for dropping signatures upon the supports to be supported thereby at a single point across the fold.

28. A signature collecting and delivery mechanism including in combination longitudinally extending flexible conveyers, rollers over which the conveyers pass, spaced apart supports extending across between the flexible conveyers and attached thereto, a plurality of elevated signature supports spaced apart on the cross supports, and means for dropping signatures upon the supports to be supported thereby at a single point across the fold, and means for intermittently moving the conveyers with respect to the signature dropping means.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOSEPH J. WALSER.

Witnesses:
W. G. FERGUSON,
E. C. MEYER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."